

Migotanie przedsionków w praktyce zespołów ratownictwa medycznego – analiza wybranych cech epidemiologicznych

(Atrial fibrillation in the practice of medical rescue teams – the analysis of the selected epidemiological features)

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Streszczenie – Wstęp. Migotanie przedsionków jest schorzeniem o niejednorodnej etiologii oraz zróżnicowanym obrazie klinicznym. Stanowi jedno z wyzwań współczesnego Systemu Ratownictwa Medycznego. Celem pracy była analiza wybranych danych epidemiologicznych pacjentów z migotaniem przedsionków, u których interweniowały zespoły ratownictwa medycznego.

Materiał i metodyka. Badaniami objęto 147 chorych (88 kobiet i 59 mężczyzn) w wieku od 22 do 97 lat (średnia 72,49 lat) z migotaniem przedsionków.

Wyniki. Migotanie przedsionków częściej występowało u kobiet niż u mężczyzn (61% vs 39%). Średnia wieku kobiet była wyższa od średniej wieku mężczyzn (74,3 lat vs 69,72 lat). Najwięcej interwencji medycznych dotyczyło pacjentów w grupie wiekowej 70-79 lat.

Wnioski. Migotanie przedsionków wykazuje sezonowość występowania, najwięcej przypadków dotyczy okresu zimowego oraz godzin porannych. Częstość występowania migotania przedsionków wzrasta wraz z wiekiem i najczęściej dotyczy kobiet.

Słowa kluczowe - migotanie przedsionków, sezonowość, zespół ratownictwa medycznego.

Abstract - Introduction. Atrial fibrillation is a condition of heterogeneous aetiology and diversified clinical presentation. It is one of the challenges the medical rescue system has to face. The purpose of the paper was to analyse selected epidemiological data of patients suffering from atrial fibrillation who required the intervention of a medical rescue team.

The material and methods. The research was conducted on 147 patients (88 women and 59 men) aged from 22 to 97 (the average age being 72,49 years of age) suffering from atrial fibrillation.

The results. Atrial fibrillation is more common in the case of women (61% vs. 39%). The average age of women was higher than that of men (74,3 vs. 69,72). The greatest number of medical interventions was observed in the age group of 70 to 79 years of age.

Conclusions. The occurrence of atrial fibrillation was observed to be time-specific, with the majority of the cases occurring during winter and in the morning. The frequency of atrial fibrillation occurrence increases with age and is more common in the case of women.

Key words - atrial fibrillation, seasonality, medical rescue team.

I. INTRODUCTION

Atrial fibrillation (AF) is a serious medical and social problem despite the significant progress that diagnostics and treatment have undergone in the recent years [1]. It is the most common cardiac dysrhythmia type encountered by Medical Rescue Teams [2].

According to the guidelines of the European Society of Cardiology, atrial fibrillation is the type of cardiac arrhythmia in which shows in the EKG as complete arrhythmia - totally uneven RR intervals. What is more, no clear auricular complexes (P waves) are observed in the EKG. The periods between atrial beats are prone to change and equal to 200ms, which results in hemodynamic changes [2,3]. They are often caused by irregular and too high ventricular rate and absence of atrial systole function synchronized with the ventricular function.

Atrial fibrillation is clinically divided into five types according to ESC guidelines (2009) depending on its duration and potential reversibility (fig.1).

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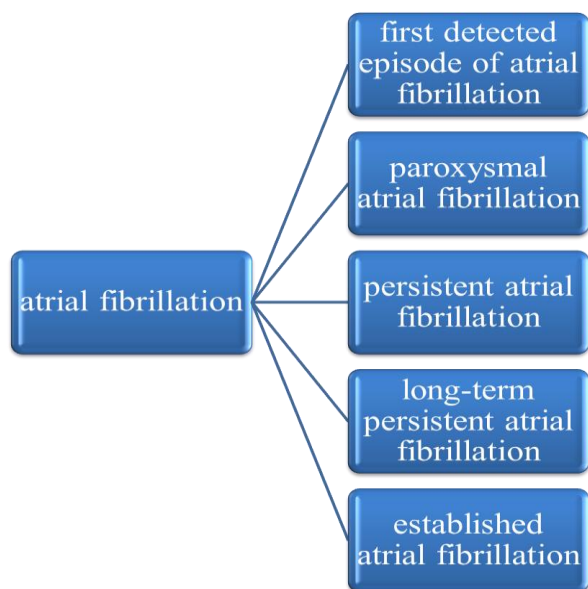


Fig. 1 Division of atrial fibrillation

The term 'first detected AF' is used in reference to detecting atrial fibrillation for the first time regardless of its duration and its symptoms. Paroxysmal AF most frequently occurs spontaneously and lasts less than 48 hours. AF is deemed persistent if it lasts longer than 2-7 days and requires pharmacological of electrical cardioversion. If AF lasts for over a year and sinus rhythm needs to be restored it is the case of long-standing persistent AF. Permanent AF is a continuous atrial fibrillation when sinus rhythm cannot be restored. What is more, also silent atrial fibrillation can be discerned. It consists in the absence of arrhythmic symptoms [4,5].

An especially significant element of dealing with a person suffering from AF is interviewing the patient. Information on the following should be obtained: the duration of AF fits, history of fits experienced before, kinds of AF symptoms, any chronic illnesses the patient is treated for and what kind of medication he or she uses. What is more, the person in charge should inquire whether the patient has ever undergone electrical or pharmacological cardioversion and, if so, what its outcome was. Proper interview made by trained medical staff often allows them to identify the cause of arrhythmia.

One has to remember that atrial fibrillation, regardless of its aetiology, facilitates thromboembolic complications. That is because blood flow is slower and haemostasis in left atrium [1,6].

In an ambulance, the patient should be properly secured and his or her basic vital signs (pulse, respiration, blood pressure) should be monitored at all times during the transport. [2]. Oxygenation should be implemented. The intravenous access should be provided beforehand in case the patient needs to have medications applied immediately.

Medical procedures in the case of patients suffering from atrial fibrillation should be focused the control of the heart rate, the restoration of the sinus rhythm and the prevention from thromboembolic complications [2,5].

The purpose of the paper is to analyse selected epidemiological features of patients suffering from atrial fibrillation in the material of Medical Rescue Teams working in the Otwock district in 2009.

II. MATERIALS AND METHODS

In this paper, the cases of Medical Rescue Teams' medical interventions in the Otwock district in 2009 were retrospectively analysed.

The analysed factors were: the age and sex of the patient, the time of day and year, the type of atrial fibrillation and signs reported by the patients.

Statistical analysis

The statistical analysis was performed using the Statistica 8.0. software package. T-Student's test, Wilcoxon signed-rank test, chi-squared test, cross tabulation chi-squared test and Cramer's V. The significance level for all of these tests was $p=0,05$.

III. RESULTS

Among 147 patients who required an intervention of Medical Rescue Teams (MRT) because of atrial fibrillation, there were more women (61% of all cases ($n=89$)). Men amounted to 39% ($n=58$). See Table 1.

Table 1. Characteristics of the studied group

Group	Number of patients [N] / [%]	Age [mean±SD]	Significance level
Men	58/39	69,72 ± 14,62	0,0616
Women	89 / 61	74,30 ± 10,99	0,00004
Total	147 / 100	72,49 ± 12,7	0,0000

The average age of all the patients was 72,49±18,74. Men were on average 5 years younger than women, which yields a

statistically significant difference (fig.2). It was recorded that MRTs intervened most frequently in the cases of patients aged between 70 and 79.

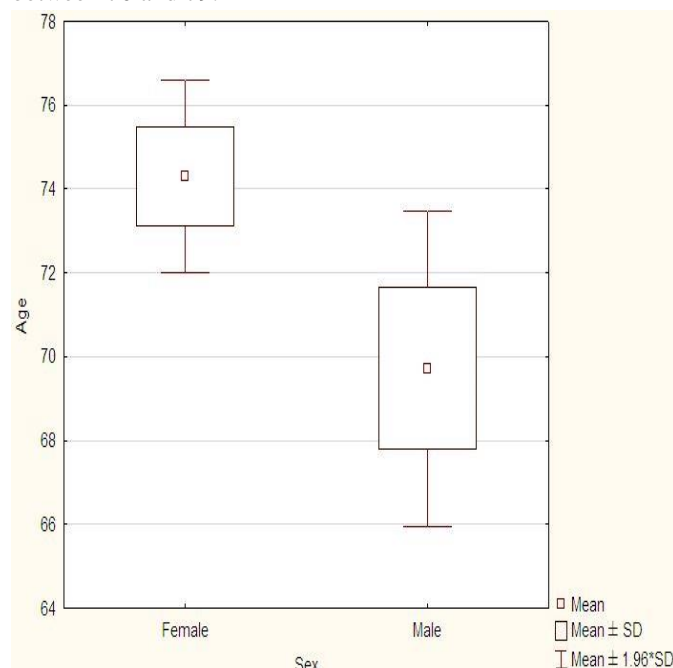


Fig. 2 Box plots for mean age of men and women

Tab 2 Count of the group in relation to age and sex

Age	Men		Women		Total
	[N]	[%]	[N]	[%]	
20-29	0	0	2	3	2
30-39	0	0	1	2	1
40-49	2	2	4	7	6
50-59	6	7	5	9	11
60-69	21	24	11	19	32
70-79	30	34	24	41	54
80-89	26	29	11	19	37
>90	4	4	0	0	4

The frequency of AF occurrence was related also to the time of the day. Atrial fibrillation occurred most frequently in two periods, namely between 8 and 8:59 a.m. and between 10 and 10:59 a.m. (n=11, 7% for each period), followed by 1 to 1:59 p.m. (n=10; 7%). No cases were discovered between 1 and 1:59 a.m. The statistical analysis indicated that the risk of atrial fibrillation changes in a statistically significant way depending on the time of the day (Shapiro-Wilk test, $p=0.0112$) (fig.3).

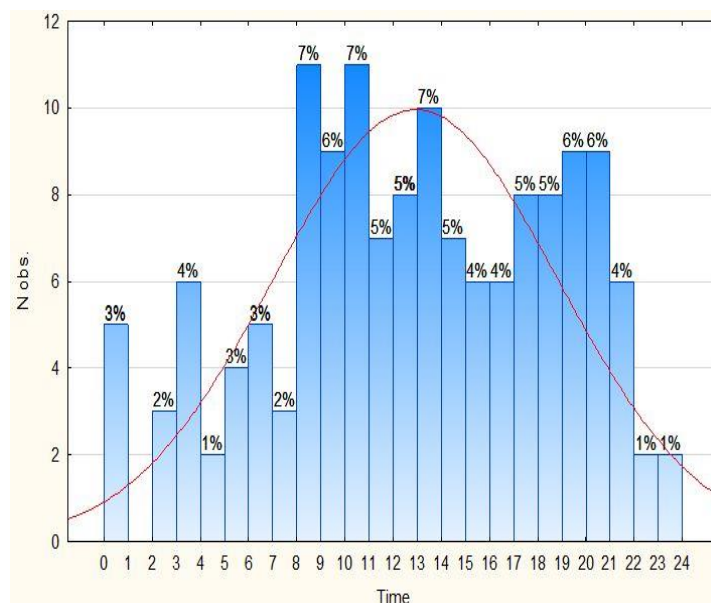


Fig. 3 The frequency of atrial fibrillation in reference to the time of the day

Additionally, an analysis of AF occurrence in the times of the day with hours divided into four periods was undertaken. These groups were: midnight to 5:59 a.m., 6 to 11:59 a.m., noon to 5:59 p.m. and 6 to 11:59 p.m. (fig.4).

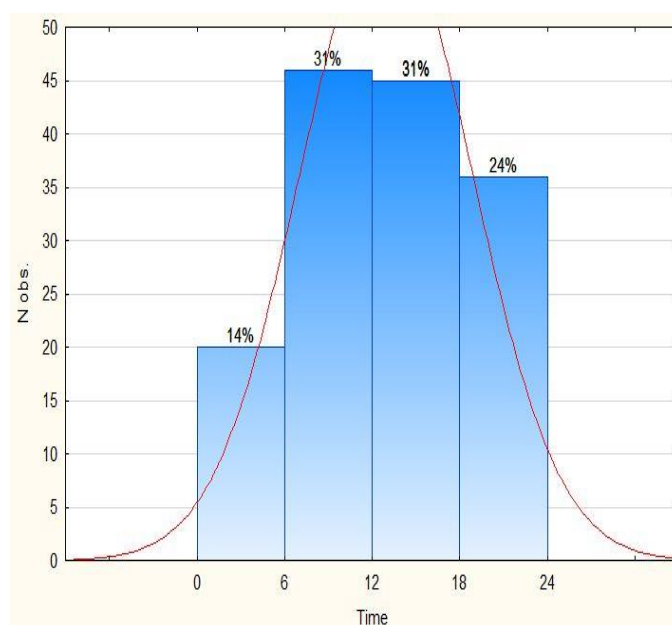


Fig. 4 The frequency of atrial fibrillation occurrence with the division into four times of the day

The most frequent episodes of atrial fibrillation were recorded in the morning, between 6 and 11:59 a.m. – 46 cases amounting to 31% of all. This was followed by the period between noon and 5:59 p.m. with 45 cases (31%). In the period between 6 and 11:59 p.m. 24% of all cases were recorded (n=36). The least frequent occurrence of atrial fibrillation was observed between midnight and 5:59 a.m. (n=20; 14%).

The frequency of AF occurrence was also analysed in terms of months. Atrial fibrillation was most frequent in January (n=21; 14%), followed by October (n=18; 12%; ryc.5). July and November were characterised by statistically significant lower frequencies of AF (n=5; 3% for each). An additional analysis pertaining to seasons showed that AF was most frequent during winter (n=43; 29%), followed by spring (n=40; 27%), summer (n=34; 23%) and autumn (n=30; 20%; ryc.6).

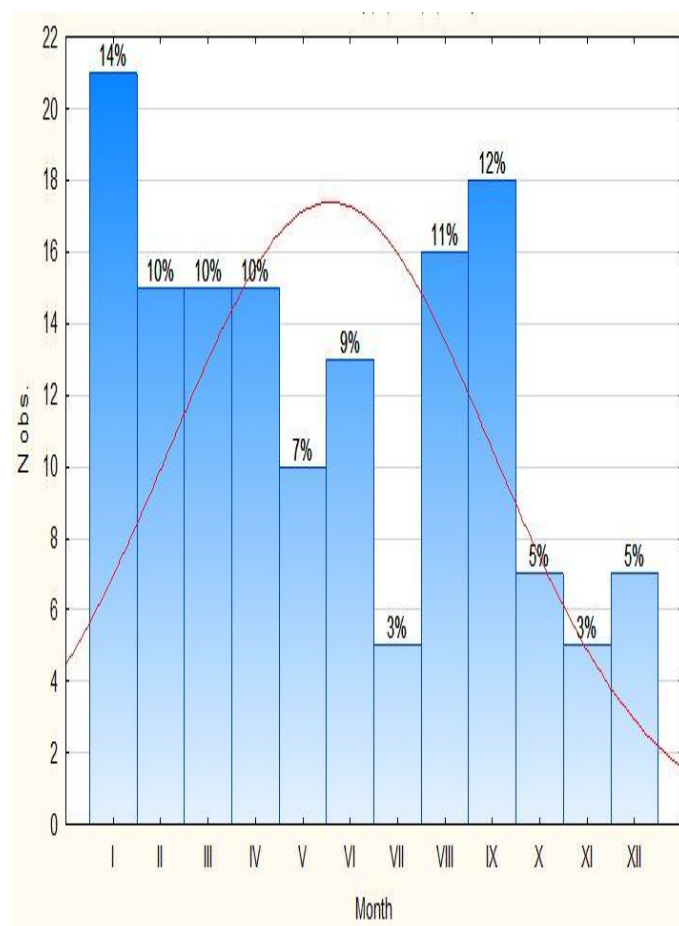


Fig. 5 Distribution of AF occurrence into months

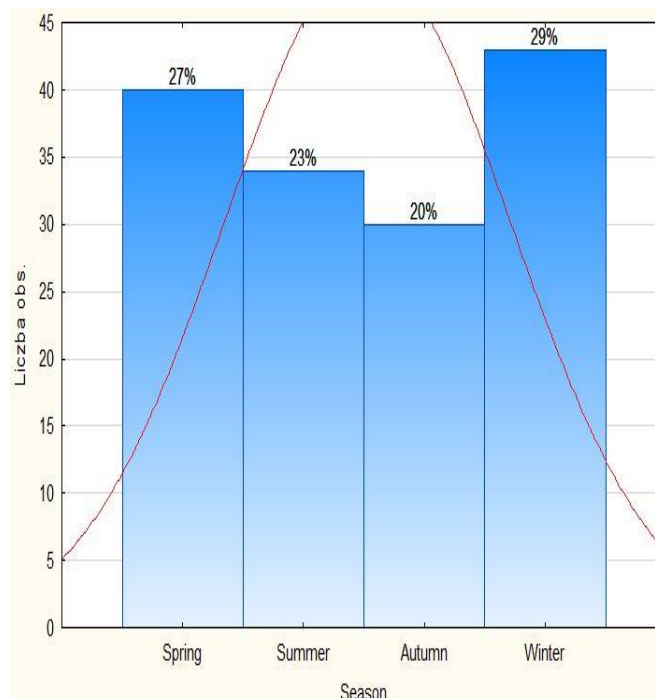


Fig. 6 Distribution of AF occurrence into seasons

Taking into account the duration of atrial fibrillation, patients were divided into 5 groups. MRTs intervened most frequently in the cases of paroxysmal AF – 60 times (40,82%), followed by permanent AF – 38 cases (25,85%). The first detected AF was the case of 21 patients (14,29%). Persistent atrial fibrillation was recorded in 18 cases (12,24), while silent AF (with no arrhythmic symptoms) occurred in 11 cases (7,48%).

IV. DISCUSSION

Atrial fibrillation is the most frequent hear rate disorder. The task of Medical Rescue Teams is to come up with a quick presumptive diagnosis and stabilize vital signs of the people whose life or well-being is in danger as a result of emergency [7].

In the studied material, atrial fibrillation was more frequent in the case of women (61%). This was also the observation of other authors, for instance: Gluszek *et al.* – 52% [8] of women, Lubitz *et al.* – 54% [9], Mashal *et al.* – 55,3% [10] and Lengyel *et al.* – 70% [11]. Nevertheless, some authors indicate dominance of men among people affected by the disorder, for example Olsson *et al.* – 56,5% [12] or Arribas-Leal *et al.* – 72% [3].

As we have managed to establish, atrial fibrillation is most frequently the case in the age group between 70 and 79. AF more often occurs in the case of men rather than women in statistically significant way. In our studied group men were on

average 5 years younger than women (men age mean being 69,72 as opposed to women's 74,3).

The results that were closest to ours were presented by, among others, Olsson *et al.* – 71,5 [12] and Marshal *et al.* – 73,5 [10]. Arribas-Leal *et al.*, Watanabe *et al.*, Coulibaly *et al.* indicate, however, that atrial fibrillation affects mainly younger people. In their materials mean age of patients varied from 58,9 to 65 [3,13,14].

As Gluszek *et al.* report, AF is most frequent in winter. [8]. Our material displayed similar tendency. Atrial fibrillation frequency was highest in January and lowest in July and November. On the other hand, in the study of Murphy *et al.* AF was most frequent in December and the least common in June [16].

The greatest number of Medical Rescue Team interventions in the cases of atrial fibrillation was recorded at 8 and 10 a.m., whereas in terms of the time of the day, morning was the busiest period.

V. CONCLUSIONS

1. Atrial fibrillation occurrence depends on a season, being most frequent in winter and in the morning.
2. The frequency of occurrence of atrial fibrillation increases with age, most often being the case between 70 and 79 years of age. Women are affected more often than men.

VI. REFERENCES

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